

NMCP COVID-19 Literature Report #46: Friday, 30 October 2020

Prepared By: Tracy Shields, MSIS, AHIP <tracy.c.shields2.civ@mail.mil>

Reference Medical Librarian; Naval Medical Center Portsmouth, Library Services

Purpose: These weekly reports, published on Fridays, are curated collections of current research, evidence reviews, special reports, grey literature, and news regarding the COVID-19 pandemic that may be of interest to medical providers and leadership. All reports are available online at <https://nmcp.libguides.com/covidreport>. Access is private; you will need to use the direct link or bookmark the URL, along with the case-sensitive password "NMCPfinest".

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, things are changing rapidly, with new research and potentially conflicting literature published daily. Please feel free to reach out with questions, suggestions for future topics, or any other feedback.

Statistics

Global today: 45,170,690 confirmed cases and 1,183,116 deaths in 190 countries/regions

1 week ago: 41,820,333 confirmed cases and 1,138,802 deaths in 189 countries/regions

2 weeks ago: 39,015,163 confirmed cases and 1,099,727 deaths in 189 countries/regions

United States*

top 5 states by cases (Virginia is ranked 17th)

	TOTAL US	CA	TX	FL	NY	IL
Confirmed Cases	8,948,099	924,366	918,721	794,624	503,176	400,159
Tests	142,674,796	18,323,771	8,005,112	9,855,604	14,243,871	7,546,811
Deaths	228,678	17,573	18,276	16,648	33,444	9,945

*see census.gov for current US Population data; NA: not all data available

[JHU CSSE](https://covid19.jhu.edu/) as of 1000 EDT 30 October 2020

<i>Virginia</i>	Total	Chesapeake	Hampton	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach
Cases	179,639	4,972	2,147	3,247	5,445	2,858	2,324	8,057
Hospitalized	12,511	483	91	119	411	316	137	444
Deaths	3,643	79	32	51	84	69	78	108

[VA DOH](https://vax.covid19.virginia.gov/) as of 1000 EDT 30 October 2020

Updates and Special Reports

Human Rights Watch: ["Whoever Finds the Vaccine Must Share It": Strengthening Human Rights and Transparency Around Covid-19 Vaccines](#) (29 October 2020)

Key recommendations of this report include:

- "Collectively map out the global capacity to manufacture the needed supply of Covid-19 vaccines, and cooperate to develop a strategy to fund and support the creation of additional manufacturing capacity especially in low- and middle-income countries to ensure rapid and diversified large-scale production."
- "Pledge not to sign bilateral deals with vaccine developers to prebook future vaccine doses in ways that undermine equitable global allocation according to public health need."
- "Commit to transparency around Covid-19 vaccine funding by creating a public database of all contracts for funding related to Covid-19 vaccine research, development, manufacturing, or distribution."
- "Take measures to promote and facilitate technology transfers of any successful Covid-19 vaccine to make it as widely available as possible."
- "Take measures to ensure any successful vaccine is priced affordably and made accessible to all vulnerable populations."

Selected Literature: Peer-Reviewed Journals

Date given is the date published or posted online; many will later publish in print.

30 October 2020

MMWR: [SARS-CoV-2 Exposure and Infection Among Health Care Personnel — Minnesota, March 6–July 11, 2020](#)

"Health care personnel (HCP) are at increased risk for COVID-19 from workplace exposures.

Among 21,406 Minnesota SARS-CoV-2 HCP exposures, 5,374 (25%) were higher-risk (within 6 feet, ≥ 15 minutes, or during an aerosol-generating procedure); exposures involved patient care (66%) and nonpatient contacts (34%). Compared with HCP working in acute care settings, those working in congregate living and long-term care more often worked while symptomatic and received positive SARS-CoV-2 test results.

HCP should recognize potential exposures unrelated to patient care and use prevention measures, including masks. HCP in congregate living and long-term care settings experience

considerable risk and pose a transmission risk to residents. Improved access to personal protective equipment, flexible medical leave, and testing is needed."



29 October 2020

J Glob Antimicrob Resist: [Incidence of bacterial and fungal bloodstream infections in covid-19 patients in intensive care: an alarming "collateral effect"](#)

Highlights:

- COVID-19 patients have an exaggerated risk of acquiring BSI [bloodstream infection] during ICU stay
- The incidence of ICU-acquired BSI in COVID-19 patients is higher than that reported in European ICUs in the pre-COVID-19 period
- The commonest etiologic agents of BSI were intestinal commensals.
- A high rate of acquisition of VRE [vancomycin resistant enterococcus] colonisation was observed."

JAMA Oncol: [Integrated Survival Estimates for Cancer Treatment Delay Among Adults With Cancer During the COVID-19 Pandemic](#)

"Question: What are the benefits and risks associated with delayed treatment for an individual patient with cancer during the coronavirus disease 2019 pandemic, and does the use of a web-based survival model (OncCOVID) aid treatment decisions?

Findings: In this decision analytical modeling study including data from more than 6 million patients with cancer, the OncCOVID model found heterogeneity regarding the impact of delayed cancer treatment owing to patient and cancer factors that are not currently captured by commonly used triage systems. Whether delayed cancer treatment harms or improves expected survival compared with immediate treatment is dependent on patient, cancer, treatment, and community factors.

Meaning: The study's results indicate that the OncCOVID web application may allow clinicians to estimate the net impact of delayed cancer treatment for individual patients and to prioritize patients for immediate treatment in settings with limited treatment capacity."

28 October 2020

BMJ: [Risk of hospital admission with coronavirus disease 2019 in healthcare workers and their households: nationwide linkage cohort study](#)

"What is already known on this topic

- Several systematic reviews and reports have summarised studies of covid-19 infections in healthcare workers
- Most studies have been small, based in single centres, and cross sectional in nature and used methods highly susceptible to bias or restricted their populations to physicians and nurses
- Studies evaluating the risk of covid-19 infection in household members of healthcare workers are lacking

What this study adds

- Healthcare workers and their households contributed a sixth of hospital admissions with covid-19 among working age adults
- Healthcare workers in patient facing roles—especially those in 'front door' roles—are, along with their households, at higher risk of admission with covid-19
- Importantly, those in non-patient facing roles had similar risks to the general population"

Science: [Robust neutralizing antibodies to SARS-CoV-2 infection persist for months](#)

"SARS-CoV-2 has caused a global pandemic with millions infected and numerous fatalities. Questions regarding the robustness, functionality, and longevity of the antibody response to the virus remain unanswered. Here we report that the vast majority of infected individuals with mild-to-moderate COVID-19 experience robust IgG antibody responses against the viral spike protein, based on a dataset of 30,082 individuals screened at Mount Sinai Health System in New York City. We also show that titers are relatively stable for at

least a period approximating 5 months and that anti-spike binding titers significantly correlate with neutralization of authentic SARS-CoV-2. Our data suggests that more than 90% of seroconverters make detectable neutralizing antibody responses. These titers remain relatively stable for several months after infection."

27 October 2020

Clin Infect Dis: [Risk Factors for testing positive for SARS-CoV-2 in a national US healthcare system](#)

Observational cross-sectional study from the VA:

"Persons tested for SARS-CoV-2 nucleic acid by polymerase chain reaction (PCR) between March 1 and May 14, 2020.

Associations between demographic characteristics, diagnosed comorbid conditions, and documented symptoms with testing positive for SARS-CoV-2.

Of 88,747 persons tested, 10,131 (11.4%) were SARS-CoV-2 PCR positive. Positivity was associated with older age (≥ 80 vs. < 50 years: aOR 2.16, 95% CI 1.97-2.37), male sex (aOR 1.45, 95% CI 1.34-1.57), regional SARS-CoV-2 burden ($\geq 2,000$ vs. < 400 cases/million: aOR 5.43, 95% CI 4.97-5.93), urban residence (aOR 1.78, 95% CI 1.70-1.87), Black (aOR 2.15, 95% CI 2.05-2.26) or American Indian/Alaska Native/Pacific Islander (aOR 1.26, 95% CI 1.05-1.52) vs. White race, and Hispanic ethnicity (aOR 1.52, 95% CI 1.40-1.65). Obesity and diabetes were the only two medical conditions associated with testing positive. Documented fevers, chills, cough, and diarrhea were also associated with testing positive. The population attributable fraction of positive tests was highest for regional SARS-CoV-2 burden (35.3%), followed by demographic variables (27.2%), symptoms (12.0%), obesity (10.5%), and diabetes (0.4%).

Lack of information on SARS-CoV-2 exposures or the indications for testing which may affect the likelihood of testing positive.

The majority of positive SARS-CoV-2 tests were attributed to regional SARS-CoV-2 burden, demographic characteristics and obesity with a minor contribution of chronic comorbid conditions."

Int J Infect Dis: [Asymptomatic COVID-19 in hospital visitors: underestimated potential of viral shedding](#)

"In one day, 6 in 150 (4%) asymptomatic visitors were diagnosed with COVID-19 at a hospital with universal masking policy. Two inpatients (contacts) subsequently developed symptoms. More rigorous protective measures during visitation periods may need to be included in infection control practices in order to reduce nosocomial transmissions."

MMWR: [COVID-19 Mitigation Behaviors by Age Group — United States, April–June 2020](#)

"Recommended mitigation behaviors to prevent the spread of COVID-19 include wearing masks, hand washing, social distancing, and staying home when ill.

Self-reported engagement in mitigation behaviors (mask wearing, handwashing, physical distancing, crowd and restaurant avoidance, and cancellation of social activities) differed significantly by adult age group. During April–June 2020, the prevalence of these behaviors was lowest among adults aged 18–29 years and highest among those aged >60 years. Whereas mask wearing increased over time, other reported mitigation behaviors decreased or remained unchanged.

Improved communication and policy priorities are needed to promote recommended COVID-19 mitigation behaviors, particularly among young adults."

MMWR: [COVID-19 Outbreak Among a University's Men's and Women's Soccer Teams — Chicago, Illinois, July–August 2020](#)

"SARS-CoV-2 transmission occurs in congregate settings, including colleges and universities.

Investigation of 17 COVID-19 cases among a university's men's and women's soccer team identified numerous social gatherings as possible transmission events. Minimal mask use and social distancing resulted in rapid spread among students who live, practice, and socialize together.

Colleges and universities are at risk for COVID-19 outbreaks because of shared housing and social gatherings where recommended prevention guidance is not followed. Schools should consider conducting periodic repeat testing of asymptomatic students to identify outbreaks early and implementing policies and improving messaging to promote mask use and social distancing."

26 October 2020

Cardiovasc Res: [Regional and global contributions of air pollution to risk of death from COVID-19](#)

"The risk of mortality from the coronavirus disease that emerged in 2019 (COVID-19) is increased by comorbidity from cardiovascular and pulmonary diseases. Air pollution also causes excess mortality from these conditions. Analysis of the first severe acute respiratory syndrome coronavirus (SARS-CoV-1) outcomes in 2003, and preliminary investigations of those for SARS-CoV-2 since 2019, provide evidence that the incidence and severity are related to ambient air pollution. We estimated the fraction of COVID-19 mortality that is attributable to the long-term exposure to ambient fine particulate air pollution.

We characterized global exposure to fine particulates based on satellite data, and calculated the anthropogenic fraction with an atmospheric chemistry model. The degree to which air pollution influences COVID-19 mortality was derived from epidemiological data in the USA and China. We estimate that particulate air pollution contributed ~15% (95% confidence interval 7–33%) to COVID-19 mortality worldwide, 27% (13 – 46%) in East Asia, 19% (8–41%) in Europe, and 17% (6–39%) in North America. Globally, ~50–60% of the attributable, anthropogenic fraction is related to fossil fuel use, up to 70–80% in Europe, West Asia, and North America.

Our results suggest that air pollution is an important cofactor increasing the risk of mortality from COVID-19. This provides extra motivation for combining ambitious policies to reduce air pollution with measures to control the transmission of COVID-19."

J Gen Intern Med: [The Proportion of Adult Americans at Risk of Severe COVID-19 Illness](#)

"In this analysis, participants in the United States National Health and Nutrition Examination Survey (NHANES) 2011–2016 aged ≥ 20 years were included. Pregnant participants and those with missing relevant laboratory/examination/self-reported data were excluded....

This is the first study to estimate the proportion of the Americans in the general population at risk from severe COVID-19 illness using data from a nationally representative survey. Alarming, three-quarters of adult Americans are at risk. COVID-19 is a threat to people across all age groups, sexes, ethnicities, education, and income levels. Consequently, the three-quarters of adult Americans at risk should stay at home as much as possible during a pandemic. They should observe strict social distancing and personal hygiene measures, such as face covering and hand disinfection. They should have priority access to masks, viral tests, treatment facilities, drugs, and vaccines...

In conclusion, an alarming three-quarters of Americans are at increased risk of severe COVID-19 illness. Obesity and hypertension are the leading risk factors. Individuals with increased risk should strictly follow social distancing and personal hygiene measures and adopt lifestyle modifications."

JACC: [Characterization of Myocardial Injury in Patients With COVID-19](#)

"This study sought to characterize the echocardiographic abnormalities associated with myocardial injury and their prognostic impact in patients with COVID-19.

We conducted an international, multicenter cohort study including 7 hospitals in New York City and Milan of hospitalized patients with laboratory-confirmed COVID-19 who had undergone transthoracic echocardiographic (TTE) and electrocardiographic evaluation during their index hospitalization. Myocardial injury was defined as any elevation in cardiac troponin at the time of clinical presentation or during the hospitalization.

A total of 305 patients were included. Mean age was 63 years and 205 patients (67.2%) were male. Overall, myocardial injury was observed in 190 patients (62.3%). Compared with patients without myocardial injury, those with myocardial injury had more electrocardiographic abnormalities, higher inflammatory biomarkers and an increased prevalence of major echocardiographic abnormalities that included left ventricular wall motion abnormalities, global left ventricular dysfunction, left ventricular diastolic dysfunction grade II or III, right ventricular dysfunction and pericardial effusions. Rates of in-hospital mortality were 5.2%, 18.6%, and 31.7% in patients without myocardial injury, with myocardial injury without TTE abnormalities, and with myocardial injury and TTE abnormalities. Following multivariable adjustment, myocardial injury with TTE abnormalities was associated with higher risk of death but not myocardial injury without TTE abnormalities.

Among patients with COVID-19 who underwent TTE, cardiac structural abnormalities were present in nearly two-thirds of patients with myocardial injury. Myocardial injury was associated with increased in-hospital mortality particularly if echocardiographic abnormalities were present."

JAMA: [Preventing the Spread of SARS-CoV-2 With Masks and Other "Low-tech" Interventions](#)

"Masks should be used in combination with other modalities to prevent the spread of SARS-CoV-2, including physical distancing, hand hygiene, adequate ventilation, and avoiding crowded spaces. Widespread testing for SARS-CoV-2 infection is also important but insufficient on its own for pandemic control. No test is perfect; all have a lower limit of detection for viral material and the potential for false negatives. In addition, the result of a test represents just one point in time and does not indicate an individual's status outside of the moment the specimen was collected. Testing, along with contact tracing and the isolation of individuals who are infected, is a key tool for curbing the spread of SARS-CoV-2. However, reliance on testing alone to prevent transmission will be ineffective without the use of additional strategies such as mask wearing and physical distancing."

JAMA Cardiol: [Coronavirus Disease 2019 and the Athletic Heart: Emerging Perspectives on Pathology, Risks, and Return to Play](#)

"Importance: Cardiac injury with attendant negative prognostic implications is common among patients hospitalized with coronavirus disease 2019 (COVID-19) infection. Whether cardiac injury, including myocarditis, also occurs with asymptomatic or mild-severity COVID-19 infection is uncertain. There is an ongoing concern about COVID-19–associated cardiac pathology among athletes because myocarditis is an important cause of sudden cardiac death during exercise.

Observations: Prior to relaxation of stay-at-home orders in the US, the American College of Cardiology's Sports and Exercise Cardiology Section endorsed empirical consensus recommendations advising a conservative return-to-play approach, including cardiac risk

stratification, for athletes in competitive sports who have recovered from COVID-19. Emerging observational data coupled with widely publicized reports of athletes in competitive sports with reported COVID-19–associated cardiac pathology suggest that myocardial injury may occur in cases of COVID-19 that are asymptomatic and of mild severity. In the absence of definitive data, there is ongoing uncertainty about the optimal approach to cardiovascular risk stratification of athletes in competitive sports following COVID-19 infection.

Conclusions and Relevance: This report was designed to address the most common questions regarding COVID-19 and cardiac pathology in athletes in competitive sports, including the extension of return-to-play considerations to discrete populations of athletes not addressed in prior recommendations. Multicenter registry data documenting cardiovascular outcomes among athletes in competitive sports who have recovered from COVID-19 are currently being collected to determine the prevalence, severity, and clinical relevance of COVID-19–associated cardiac pathology and efficacy of targeted cardiovascular risk stratification. While we await these critical data, early experiences in the clinical oversight of athletes following COVID-19 infection provide an opportunity to address key areas of uncertainty relevant to cardiology and sports medicine practitioners."

JAMA Intern Med: [Hospital Volumes of 5 Medical Emergencies in the COVID-19 Pandemic in 2 US Medical Centers](#)

"We identified significant drops in the daily caseload of 4 common medical emergencies following the onset of the COVID-19 pandemic. The association was more prominent at NYP than at Stanford, likely reflecting the increased severity of the pandemic in New York City. Study limitations include potentially limited generalizability, given the setting of 2 tertiary care centers, and reliance on the accuracy of ICD-10 codes.

Recent data suggest that deaths resulting from COVID-19 account for only half of the excess number of at-home deaths during the pandemic. The combination of fewer patients presenting with medical emergencies and an increased number of non–COVID-19–related at-home deaths is concerning. Fear of exposure to patients with COVID-19 may lead individuals to defer care for acute conditions."

JAMA Intern Med: [Hospitalizations for Chronic Disease and Acute Conditions in the Time of COVID-19](#)

"We found a substantial decrease in the number of non–COVID-19 hospitalizations across a range of diagnoses during the peak COVID-19 period. The decrease was observed for exacerbations of chronic conditions (heart failure, COPD), acute medical events that typically require inpatient management (myocardial infarction, appendicitis), and injuries. Given the breadth of these diagnoses, the causes for the decrease are likely multifactorial and include patient avoidance of emergency care for fear of COVID-19 or because of lost health insurance, increased threshold for hospitalization by clinicians, and changes in

patient lifestyle and self-management in the context of social distancing. Notably, while hospitalizations for acute events began recovering in the late COVID-19 period, many of those related to chronic diseases generally did not. The implications of the decreases in hospitalizations for chronic disease are concerning for the possibility that sick patients are not obtaining necessary hospital care; alternatively, this trend could suggest prior overuse of hospitalization or improved self-management."

MMWR: [COVID-19–Associated Hospitalizations Among Health Care Personnel — COVID-NET, 13 States, March 1–May 31, 2020](#)

"Data on characteristics and outcomes of U.S. health care personnel (HCP) hospitalized with COVID-19 are limited.

Analysis of COVID-19 hospitalization data from 13 sites indicated that 6% of adults hospitalized with COVID-19 were HCP. Among HCP hospitalized with COVID-19, 36% were in nursing-related occupations, and 73% had obesity. Approximately 28% of these patients were admitted to an intensive care unit, 16% required invasive mechanical ventilation, and 4% died.

HCP can have severe COVID-19–associated illness, highlighting the need for continued infection prevention and control in health care settings as well as community mitigation efforts to reduce SARS-CoV-2 transmission."

Nat Microbiol: [Longitudinal observation and decline of neutralizing antibody responses in the three months following SARS-CoV-2 infection in humans](#)

"Antibody responses to SARS-CoV-2 can be detected in most infected individuals 10–15 d after the onset of COVID-19 symptoms. However, due to the recent emergence of SARS-CoV-2 in the human population, it is not known how long antibody responses will be maintained or whether they will provide protection from reinfection. Using sequential serum samples collected up to 94 d post onset of symptoms (POS) from 65 individuals with real-time quantitative PCR-confirmed SARS-CoV-2 infection, we show seroconversion (immunoglobulin (Ig)M, IgA, IgG) in >95% of cases and neutralizing antibody responses when sampled beyond 8 d POS. We show that the kinetics of the neutralizing antibody response is typical of an acute viral infection, with declining neutralizing antibody titres observed after an initial peak, and that the magnitude of this peak is dependent on disease severity. Although some individuals with high peak infective dose (ID₅₀ > 10,000) maintained neutralizing antibody titres >1,000 at >60 d POS, some with lower peak ID₅₀ had neutralizing antibody titres approaching baseline within the follow-up period. A similar decline in neutralizing antibody titres was observed in a cohort of 31 seropositive healthcare workers. The present study has important implications when considering widespread serological testing and antibody protection against reinfection with SARS-CoV-2, and may suggest that vaccine boosters are required to provide long-lasting protection."

23 October 2020

Lancet Respir Med: [Ventilation management and clinical outcomes in invasively ventilated patients with COVID-19 \(PROVENT-COVID\): a national, multicentre, observational cohort study](#)

"Our study provides a detailed description of various important ventilation variables and parameters, adjunctive treatments for refractory hypoxaemia, and patient characteristics and outcomes in a large set of hospitals in the Netherlands. Furthermore, we report on these variables and parameters over 4 consecutive calendar days, which allows insight into ventilation practice over time. Our study was retrospective but included consecutive patients in the first month of the outbreak in the Netherlands. In contrast to several studies in patients with COVID-19, ours included mortality at day 90.

Most patients receiving invasive ventilation for respiratory failure due to COVID-19 had moderate or severe acute respiratory distress syndrome. Respiratory system compliance was low in all patients. Protective ventilation was used often, especially with regard to the use of lower tidal volumes and the use of prone positioning as an adjunctive treatment for refractory hypoxaemia. The level of PEEP varied widely and did not change over the first days of ventilation. Of the various ventilatory variables, higher tidal volume and lower compliance in the first day of ventilation were associated with higher 28-day mortality. Mortality was high, but similar to that reported for other cohorts. Our results add to existing knowledge about epidemiological characteristics and outcomes and could be useful in planning future studies and understanding previous findings about invasive ventilation in patients with COVID-19."

Wien Klin Wochenschr: [Covid-19 screening: are forehead temperature measurements during cold outdoor temperatures really helpful?](#)

"Body temperature control is a frequently used screening test for infectious diseases, such as Covid-19 (Sars-CoV-2). We used this procedure to test the body temperature of staff members in a hospital in Tyrol (Austria), where the Covid-19 disease occurred in March 2020. The hospital is located in a mountain area at 995 m above sea level with low outdoor temperatures during early spring season. Under these conditions, we analyzed whether forehead temperature control offers a sufficient screening tool for infectious diseases.

Forehead temperature of 101 healthy male and female employees was measured with an infrared thermometer directly after entering the hospital (0 min), followed by further controls after 1 min, 3 min, 5 min and 60 min. We also tracked the outside temperature and the temperature at the entrance hall of the hospital.

Complete data of body temperature were available for 46 female and 46 male study participants. The average forehead temperature measured directly after entrance to the hospital was the lowest (0 min) 33.17 ± 1.45 °C, and increased constantly to 34.90 ± 1.49 °C after 1 min, 35.77 ± 1.10 °C after 3 min, 36.08 ± 0.79 °C after 5 min, and 36.6 ± 0.24 °C after

60 min. The outside temperature ranged between -5.5°C and 0°C , the indoor temperature had a constant value of 20.5°C .

Our results indicate that forehead infrared temperature control is not an appropriate tool to screen for infectious disease directly at the entrance of a building, at least during early spring season with cold outdoor temperatures."

22 October 2020

ACS Appl Mater Interfaces: [Daylight-Induced Antibacterial and Antiviral Cotton Cloth for Offensive Personal Protection](#)

"Cotton fabrics with durable and reusable daylight-induced antibacterial/antiviral functions were developed by using a novel fabrication process, which employs strong electrostatic interaction between cationic cotton fibers and anionic photosensitizers. The cationic cotton contains polycationic short chains produced by a self-propagation of 2-diethylaminoethyl chloride (DEAE-Cl) on the surface of cotton fibers. Then, the fabric (i.e., polyDEAE@cotton) can be readily functionalized with anionic photosensitizers like rose Bengal and sodium 2-anthraquinone sulfate to produce biocidal reactive oxygen species (ROS) under light exposure and consequently provide the photo-induced biocidal functions. The biocidal properties of the photo-induced fabrics (PIFs) were demonstrated by ROS production measurements, bactericidal performance against bacteria (e.g., E coli and L. innocua), and antiviral results against T7 bacteriophage. The PIFs achieved 99.9999% (6 log) reductions against bacteria and the bacteriophage within 60 min of daylight exposure. Moreover, the PIFs showcase excellent washability and photostability, making them ideal materials for reusable face masks and protective suits with improved biological protections compared with traditional PPE. This work demonstrated that the cationized cotton could serve as a platform for different functionalization applications, and the resulting fiber materials could inspire the development of reusable and sustainable PPE with significant bioprotective properties to fight the COVID-19 pandemic as well as the spread of other contagious diseases."

Euro Surveill: [A large national outbreak of COVID-19 linked to air travel, Ireland, summer 2020](#)

"An outbreak of 59 cases of coronavirus disease (COVID-19) originated with 13 cases linked by a 7 h, 17% occupancy flight into Ireland, summer 2020. The flight-associated attack rate was 9.8–17.8%. Spread to 46 non-flight cases occurred country-wide. Asymptomatic/pre-symptomatic transmission in-flight from a point source is implicated by 99% homology across the virus genome in five cases travelling from three different continents. Restriction of movement on arrival and robust contact tracing can limit propagation post-flight."

Genome Res: [Sequencing identifies multiple early introductions of SARS-CoV-2 to the New York City Region](#)

"Effective public response to a pandemic relies upon accurate measurement of the extent and dynamics of an outbreak. Viral genome sequencing has emerged as a powerful approach to link seemingly unrelated cases, and large-scale sequencing surveillance can inform on critical epi-demiological parameters. Here, we report the analysis of 864 SARS-CoV-2 sequences from cases in the New York City metropolitan area during the COVID-19 outbreak in Spring 2020. The majority of cases had no recent travel history or known exposure, and genetically linked cases were spread throughout the region. Comparison to global viral sequences showed that early transmission was most linked to cases from Europe. Our data are consistent with numerous seeds from multiple sources and a prolonged period of unrecognized community spreading. This work highlights the complementary role of genomic surveillance in addition to traditional epidemiological indicators."

J Clin Microbiol: [Comparison of upper respiratory viral load distributions in asymptomatic and symptomatic children diagnosed with SARS-CoV-2 infection in pediatric hospital testing programs](#)

"The distribution of upper respiratory viral loads (VL) in asymptomatic children infected with SARS-CoV-2 is unknown. We assessed PCR cycle threshold (Ct) values and estimated VL in infected asymptomatic children diagnosed in nine pediatric hospital testing programs. Records for asymptomatic and symptomatic patients with positive clinical SARS-CoV-2 tests were reviewed. Ct values were adjusted by centering each value around the institutional median Ct value from symptomatic children tested with that assay, and converted to estimated VL (copies/mL) using internal or manufacturer data.

Adjusted Ct values and estimated VL for asymptomatic versus symptomatic children (118 vs. 197 ages 0-4; 79 vs 97 ages 5-9; 69 vs 75 ages 10-13; 73 vs 109 ages 14-17) were compared. The median adjusted Ct value in asymptomatic children was 10.3 cycles higher than for symptomatic children ($p < 0.0001$), and VL 3-4 logs lower ($p < 0.0001$); differences were consistent ($p < 0.0001$) across all four age brackets. These differences were consistent across all institutions and by sex, ethnicity, and race. Asymptomatic children with diabetes (OR 6.5, $p = 0.01$), recent contact (OR 2.3, $p = 0.02$), and testing for surveillance (OR 2.7, $p = 0.005$) had higher estimated risk of having a Ct value in the lowest quartile than children without, while immunocompromise had no effect.

Children with asymptomatic SARS-CoV-2 infection had lower levels of virus in the nasopharynx/oropharynx than symptomatic children, but timing of infection relative to diagnosis likely impacted levels in asymptomatic children. Caution is recommended when choosing diagnostic tests for screening of asymptomatic children."

PLoS One: [Psychological impact of mass quarantine on population during pandemics—The COVID-19 Lock-Down \(COLD\) study](#)

"Quarantine often is an unpleasant experience. The aim of this study is to explore the degree of psychological distress in terms of—Depression, Anxiety and Stress among the adult population in India during the strict 21 days mandatory lockdown. We hypothesize that quantification of psychological impact of current situation will help us to modify the policies and implementation strategies. This assessment might also help in future to keep targeted services in place, to cope up with the psychological distress of the quarantined population.

A cross sectional survey design was adopted to assess the psychological state of general population in India, during the COVID-19 mandatory lockdown period, with the help of a validated questionnaire.

The reported prevalence of depression was around 30.5%, which was the highest among the variables of psychological health. Anxiety was reported by 22.4%, followed by stress which was seen in 10.8% of respondents. In the third week the incidence of depression (37.8% versus 23.4%; $p<0.001$), anxiety (26.6% versus 18.2%; $p<0.001$) and stress (12.2% versus 9.3%; $p<0.045$) was reported to be significantly higher as compared to second week.

Our results suggest a progressively detrimental impact of lockdown on various aspects of psychological health. We noticed around eight to ten fold increase in the prevalence of depression (30.5%) and anxiety (22.4%) during lockdown, as compared to baseline statistics in Indian population (3.1–3.6% for depressive disorders and 3.0–3.5% for anxiety disorders)."

21 October 2020

Anesth Analg: [Aspirin Use is Associated with Decreased Mechanical Ventilation, ICU Admission, and In-Hospital Mortality in Hospitalized Patients with COVID-19](#)

"A retrospective, observational cohort study of adult patients admitted with COVID-19 to multiple hospitals in the United States between March 2020 and July 2020 was performed. The primary outcome was the need for mechanical ventilation. Secondary outcomes were ICU admission and in-hospital mortality. Adjusted hazard ratios for study outcomes were calculated using Cox proportional hazards models after adjustment for the effects of demographics and co-morbid conditions.

Four hundred twelve patients were included in the study. Three hundred fourteen patients (76.3%) did not receive aspirin, while 98 patients (23.7%) received aspirin within 24 hours of admission or 7 days prior to admission. Aspirin use had a crude association with less mechanical ventilation (35.7% aspirin vs. 48.4% non-aspirin, $p=0.03$) and ICU admission (38.8% aspirin vs. 51.0% non-aspirin, $p=0.04$), but no crude association with in-hospital

mortality (26.5% aspirin vs. 23.2% non-aspirin, $p=0.51$). After adjusting for 8 confounding variables, aspirin use was independently associated with decreased risk of mechanical ventilation (adjusted HR 0.56, 95% CI 0.37-0.85, $p=0.007$), ICU admission (adjusted HR 0.57, 95% CI 0.38-0.85, $p=0.005$), and in-hospital mortality (adjusted HR 0.53, 95% CI 0.31-0.90, $p=0.02$). There were no differences in major bleeding ($p=0.69$) or overt thrombosis ($p=0.82$) between aspirin users and non-aspirin users.

Aspirin use may be associated with improved outcomes in hospitalized COVID-19 patients. However, a sufficiently powered randomized controlled trial is needed to assess whether a causal relationship exists between aspirin use and reduced lung injury and mortality in COVID-19 patients."

Emerg Infect Dis: [Aspergillosis Complicating Severe Coronavirus Disease](#)

"Aspergillosis complicating severe influenza infection has been increasingly detected worldwide. Recently, coronavirus disease–associated pulmonary aspergillosis (CAPA) has been detected through rapid reports, primarily from centers in Europe. We provide a case series of CAPA, adding 20 cases to the literature, with review of pathophysiology, diagnosis, and outcomes. The syndromes of pulmonary aspergillosis complicating severe viral infections are distinct from classic invasive aspergillosis, which is recognized most frequently in persons with neutropenia and in other immunocompromised persons. Combined with severe viral infection, aspergillosis comprises a constellation of airway-invasive and angio-invasive disease and results in risks associated with poor airway fungus clearance and killing, including virus- or inflammation-associated epithelial damage, systemic immunosuppression, and underlying lung disease. Radiologic abnormalities can vary, reflecting different pathologies. Prospective studies reporting poor outcomes in CAPA patients underscore the urgent need for strategies to improve diagnosis, prevention, and therapy."

Eur J Immunol: [Seroprevalence of anti-SARS-CoV-2 antibodies in COVID-19 patients and healthy volunteers up to six months post disease onset](#)

"SARS-CoV-2 has emerged as a human pathogen, causing clinical signs, from fever to pneumonia – COVID-19 – but may remain mild or asymptomatic. To understand the continuing spread of the virus, to detect those who are and were infected, and to follow the immune response longitudinally, reliable and robust assays for SARS-CoV-2 detection and immunological monitoring are needed. We quantified immunoglobulin (Ig) M, IgG and IgA antibodies recognizing the SARS-CoV-2 receptor-binding domain (RBD) or the Spike (S) protein over a period of five months following COVID-19 onset. We report the detailed setup to monitor the humoral immune response from over 300 COVID-19 hospital patients and healthcare workers, 2500 University staff and 198 post-COVID-19 volunteers. Anti-SARS-CoV-2 antibody responses follow a classic pattern with a rapid increase within the first three weeks after symptoms. Although titres reduce subsequently, the ability to detect anti-

SARS-CoV-2 IgG antibodies remained robust with confirmed neutralisation activity for up to six months in a large proportion of previously virus-positive screened subjects. Our work provides detailed information for the assays used, facilitating further and longitudinal analysis of protective immunity to SARS-CoV-2. Importantly, it highlights a continued level of circulating neutralising antibodies in most people with confirmed SARS-CoV-2."

19 October 2020

J Perinat Med: [Clinical manifestation, outcomes in pregnant women with COVID-19 and the possibility of vertical transmission: a systematic review of the current data](#)

"To assess perinatal outcomes of COVID-19 infections during pregnancy and the possibility of vertical transmission.

An analysis was performed using Stata 15.0, and Q-test was used to evaluate the heterogeneity of the included studies.

The most common symptoms were found to be fever (64.78%), cough (59.81%) and shortness of breath or dyspnea (23.86%). Of this 88.73% patients demonstrated typical COVID-19 signs on chest CT or X-ray. Intubation was carried out in 35.87% of patients, and 4.95% of mothers were admitted to the intensive care unit, where the rate of maternal death was <0.01% and that of premature delivery was 25.32%. The rate of the birth weight being <2,500 g was 30.65% and that of Neonatal intensive care unit (NICU) admission was 24.41%. Positive nasopharynx swabs or sputum from newborns was <0.01%.

Pregnant patients with COVID-19 most commonly presented with fever, cough, shortness of breath and dyspnea, most of which possessed imaging manifestations. The risk of intubation and admission to intensive care unit were high. The risk of premature delivery was higher, leading to a high risk of NICU admission and low neonatal birthweight. Vertical transmission of SARS-CoV-2 from mother to child was found to be unlikely."

ICYMI

Clin Infect Dis: [Longitudinal Profile of Laboratory Parameters and Their Application in the Prediction for Fatal Outcome Among Patients Infected With SARS-CoV-2: A Retrospective Cohort Study](#) (13 October 2020)

"A retrospective cohort study was performed in a cohort of patients with confirmed COVID-19 in one designated hospital in Wuhan, China, from 17 January–5 March 2020. The laboratory parameters and a panel of cytokines were consecutively evaluated until patients' discharge or death. The laboratory features that could be used to predict fatal outcome were identified.

Consecutively collected data on 55 laboratory parameters and cytokines from 642 patients with COVID-19 were profiled along the entire disease course, based on which 3 clinical stages (acute stage, days 1–9; critical stage, days 10–15; and convalescence stage, day 15 to observation end) were determined. Laboratory findings based on 75 deceased and 357 discharged patients revealed that, at the acute stage, fatality could be predicted by older age and abnormal lactate dehydrogenase (LDH), urea, lymphocyte count, and procalcitonin (PCT) level. At the critical stage, the fatal outcome could be predicted by age and abnormal PCT, LDH, cholinesterase, lymphocyte count, and monocyte percentage. Interleukin 6 (IL-6) was remarkably elevated, with fatal cases having a more robust production than discharged cases across the whole observation period. LDH, PCT, lymphocytes, and IL-6 were considered highly important prognostic factors for COVID-19–related death.

The identification of predictors that were routinely tested might allow early identification of patients at high risk of death for early aggressive intervention."

Clin Exp Dent Res: [How to deal with coronavirus disease 2019: A comprehensive narrative review about oral involvement of the disease](#) (05 October 2020)

"Twenty-three articles were included in this review. Three different oral manifestations were found: taste alteration, oral blister and ulcers, and oral lesions associated with Kawasaki-like diseases (erythema, bleeding of lips, "strawberry tongue"). The higher expression of Angiotensin-converting enzyme 2 in the oral cavity and in endothelial cells might be responsible for oral manifestation and the major report of signs and symptoms in the occidental countries.

Detecting oral signs and symptoms of COVID-19 could be useful to perform a better preliminary triage in dental setting, and in recognizing possible early manifestations of the disease. However, considering the outbreak of COVID-19 and the consequent difficulty of undergoing oral examinations, the oral manifestations might be misdiagnosed; then, we would encourage oral professionals to perform other studies about this topic."

Selected Literature: Preprints

Preprints are found on preprint servers such as [arXiv](#), [bioRxiv](#), and [medRxiv](#); they are commonly used for biomedical research. Preprints may later be published in peer-reviewed journals.

Per medRxiv: "Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information."

medRxiv: [Clinically identifiable autoreactivity is common in severe SARS-CoV-2 Infection](#) (posted 28 October 2020)

"Severe SARS-CoV-2 infection is linked to the presence of autoantibodies against multiple targets, including phospholipids and type-I interferons. We recently identified activation of an autoimmune-prone B cell response pathway as correlate of severe COVID-19, raising the possibility of de novo autoreactive antibody production during the antiviral response. Here, we identify autoreactive antibodies as a common feature of severe COVID-19, identifying biomarkers of tolerance breaks that may indicate aggressive immunomodulation."

medRxiv: [Viral dynamics of SARS-CoV-2 infection and the predictive value of repeat testing](#) (posted 23 October 2020)

"SARS-CoV-2 diagnostics that report viral RNA concentrations can be used to determine a patient's stage of infection, but this potential has not yet been realized due to a lack of prospective longitudinal data to calibrate such inferences. Here, we report the viral RNA trajectories for 68 individuals using quantitative PCR testing. On average, symptomatic and asymptomatic individuals reached similar peak viral RNA concentrations (22.2 Ct, 95% credible interval [19.1, 25.1] vs. 22.4 Ct [20.2, 24.5]) within similar amounts of time (2.9 days [0.7, 4.7] vs. 3.0 days [1.3, 4.3]), but acute shedding lasted longer for symptomatic individuals (10.5 days [6.5, 14.0] vs. 6.7 days [3.2, 9.2]). A second test within 2 days after an initial positive PCR result reliably indicated whether viral RNA concentration was increasing, decreasing, or in a low-level persistent phase. Quantitative viral RNA assessment, informed by viral trajectory, can improve algorithms for clinical and public health management."

medRxiv: [Cognitive deficits in people who have recovered from COVID-19 relative to controls: An N=84,285 online study](#) (posted 21 October 2020)

"Case studies have revealed neurological problems in severely affected COVID-19 patients. However, there is little information regarding the nature and broader prevalence of cognitive problems post-infection or across the full spread of severity. We analysed cognitive test data from 84,285 Great British Intelligence Test participants who completed a questionnaire regarding suspected and biologically confirmed COVID-19 infection. People who had recovered, including those no longer reporting symptoms, exhibited significant cognitive deficits when controlling for age, gender, education level, income, racial-ethnic group and pre-existing medical disorders. They were of substantial effect size for people who had been hospitalised, but also for mild but biologically confirmed cases who reported no breathing difficulty. Finer grained analyses of performance support the hypothesis that COVID-19 has a multi-system impact on human cognition."

medRxiv: [The effect of influenza vaccination on trained immunity: impact on COVID-19](#) (posted 16 October 2020)

"Every year, influenza causes 290.000 to 650.000 deaths worldwide and vaccination is encouraged to prevent infection in high-risk individuals. Interestingly, cross-protective effects of vaccination against heterologous infections have been reported, and long-term boosting of innate immunity (also termed trained immunity) has been proposed as the underlying mechanism. Several epidemiological studies also suggested cross-protection between influenza vaccination and COVID-19 during the current pandemic. However, the mechanism behind such an effect is unknown. Using an established in-vitro model of trained immunity, we demonstrate that the quadrivalent inactivated influenza vaccine used in the Netherlands in the 2019-2020 influenza season can induce a trained immunity response, including an improvement of cytokine responses after stimulation of human immune cells with SARS-CoV-2. In addition, we found that SARS-CoV-2 infection was less common among Dutch hospital employees who had received influenza vaccination during the 2019/2020 winter season (RR = 0,61 (95% CI, 0.4585 - 0.8195, P = 0.001). In conclusion, a quadrivalent inactivated influenza vaccine can induce trained immunity responses against SARS-CoV-2, which may result in relative protection against COVID-19. These data, coupled with similar recent independent reports, argue for a beneficial effect of influenza vaccination against influenza as well as COVID-19, and suggests its effective deployment in the 2020-2021 influenza season to protect against both infections."

News in Brief

Infections are surging around the country, with almost half a million Americans getting COVID-19 in the last week ([Reuters](#)).

The Marshall Islands is no longer coronavirus free; 2 workers, who were asymptomatic, at the military base tested positive for SARS-CoV-2 after arriving from Hawaii ([NPR](#)).

"Internal documents reveal COVID-19 hospitalization data the government keeps hidden" ([NPR](#)).

The WHO warns that it would 'dangerous' to give up on efforts to control the coronavirus ([STAT](#)).

Exposure and Testing

Why don't we have home tests for COVID-19? ([WaPo](#))

As COVID infections increase and clusters pop up, things could get worse over the winter as the pandemic hits flu season ([Nature](#)).

The CDC is starting the National Wastewater Surveillance System (NWSS) in response to the COVID-19 pandemic ([CDC](#)).

Curious about how coronavirus might spread indoors? Check out this visualization: "A room, a bar and a classroom: how the coronavirus is spread through the air" ([El Pais](#)).

Treatments and Therapies

Regeneron's antibody cocktail cuts viral load for COVID-19, but the numbers needed to treat is high – as is the cost ([Medpage](#)).

Eli Lilly has stopped its antibody trial in hospitalized COVID-19 patients after federal researchers at NIAID concluded bamlanivimuab offers no benefit ([NPR](#); [read statement from Lilly](#)).

Meanwhile, the company landed a big deal with the government to provide 300,000 vials of the drug ([Endpoints](#)).

Antibody treatments are promising, but they are expensive and difficult to make ([Nature](#)).

Vaccines

The vaccine trials from Johnson & Johnson and AstraZeneca, paused earlier this month, are set to resume ([WaPo](#)).

Novavax delayed the start of their phase 3 vaccine trial until the end of November, citing delays in scaling up manufacturing ([CNBC](#)).

"It may be time to reset expectations on when we'll get a Covid-19 vaccine" ([STAT](#)).

The military's role in any COVID-19 vaccine effort will mostly be with logistics ([DOD](#)).

A Pediatric Perspective

"Why schools probably aren't COVID hotspots" ([Nature](#)).

Social media pressures, loneliness, the climate crisis and the pandemic are all taking a toll on the mental health of children ([Walrus](#)).

Thanks, Coronavirus

"What we know so far about how COVID affects the nervous system" ([SciAm](#)).

"I have all the symptoms of a Covid-19 long-hauler — but I'm hesitant to identify myself as one" ([STAT](#)).

Long read: "The Covid-19 tipping point doctors fear most is getting closer" ([Vox](#)).

Other Outbreaks and Health Threats

" People are still having sex. So why are STD rates dropping?" Hint: they aren't getting tested ([NYT](#)).

There are 2 different *E. coli* O157:H7 outbreaks being investigated by the CDC; the source is still unknown, but one is the same strain that caused an outbreak linked to romaine lettuce in 2019 ([CDC](#)).

Deli meats appear to be the source of a multi-state outbreak of *Listeria monocytogenes* infections ([CDC](#)).

The WHO is looking at granting emergency approval to a new polio vaccine ([Nature](#)).

An outbreak of chikungunya in Sudan is widening ([ONT](#)).

The 11th Ebola outbreak in the DRC has 130 confirmed cases with 55 deaths; as of 27 October 2020, there's been 28 days without a new confirmed case ([WHOAFRO](#)).

And Now for Something Completely Different

If you are looking for an artistic escape, the Guggenheim New York has a sensory guide to the museum. *Mind's Eye* is a "compilation of what the museum calls 'quintessential New York voices' describing the stunning architecture of Frank Lloyd Wright's iconic building" ([NPR](#); [Guggenheim](#)).

You might also want to check out the virtual tours from the Smithsonian's National Museum of Natural History ([Smithsonian](#)).

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Updates and Special Reports

Human Rights Watch: "Whoever Finds the Vaccine Must Share It": Strengthening Human Rights and Transparency Around Covid-19 Vaccines (29 October 2020) Link: <https://www.hrw.org/report/2020/10/29/whoever-finds-vaccine-must-share-it/strengthening-human-rights-and-transparency>

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